

**What is claim d is:**

1. An apparatus comprising:  
a surface on a body, said body adapted to move through a fluid; and  
a plurality of nanostructures or microstructures disposed in a pattern on  
5 said surface in a way such that friction between said surface and said fluid is  
controlled.
2. The apparatus of claim 1 wherein said body is an underwater  
vehicle.
3. The apparatus of claim 2 wherein said body is a submarine.
- 10 4. The apparatus of claim 2 wherein said body is a torpedo.
5. The apparatus of claim 1 further comprising at least a first electrode  
adapted to apply a voltage differential between said surface and said fluid in a  
way such that said fluid is caused to penetrate said pattern.
6. A method for controlling friction on at least one surface of a vehicle  
15 moving through a fluid, said method comprising patterning said at least one  
surface with nanostructures or microstructures.
7. The method of claim 6 wherein said vehicle is an underwater  
vehicle.
8. The method of claim 7 wherein said vehicle is a submarine.
- 20 9. The method of claim 7 wherein said vehicle is a torpedo.
10. The method of claim 6 further comprising:  
inducing controlled penetration of said fluid into said at least one  
surface.
11. The method of claim 10 wherein said step of inducing comprises  
25 applying a voltage differential between said surface and said fluid in a way  
such that said fluid is caused to penetrate said pattern of nanostructures or  
microstructures.